

From: [Danielle DeVoney](#)
To: [John Whalan](#); [Thomas Bateson](#); [Susan Euling](#); [Susan Makris](#); [Kathleen Raffaele](#); [Ravi Subramaniam](#); [Jennifer Jinot](#); [Stan Barone](#); [Sury Vulimiri](#); [Karen Hogan](#)
Subject: 3 PM Team meeting - Agenda
Date: 03/16/2010 12:46 PM
Attachments: [FA-ProjectPlan-25Jan10_Status 22Feb10dd.doc](#)

Hi - As you know the Interagency review draft will be going out tomorrow! Yea! The Agency decided to wait until a briefing could be scheduled with interested Agencies, prior to release. That briefing will be at 1PM today.

I don't think we have allot to chat about today - and folks probably need a bit of a break - at least I do :-)

However, allot has been happening so we can meet and discuss a few issues - and perhaps get back into the swing of things next week, So proposed topics for today's meeting:

Agenda:

- 1) Discussion of the IA briefing by Peter
(I sent the slides out a few minutes ago)
- 2) General discussion of where we are - current proposed schedules / dates for NAS review etc.
Much is in flux - but it is my experience from our team meetings that folks will have questions
- 3) Looking towards next week: (i.e. items for discussion next Tuesday)
 - Need to revisit document revisions / updates for NAS draft (see attached project plan from Jan)
 - Some discussion by management of "locking" chapters 5 and 6 and await IA review comments
 - John and I will meet w/ mgmt on Monday regarding other process checklist items
(e.g. FR notice, press materials Q&As , other mgmt briefings etc.
 - Follow-up on Myeloid leukemia paper (Hauptmann et al., 2009)



FA-ProjectPlan-25Jan10_Status 22Feb10dd.doc

From: [David Bussard](#)
To: [Ravi Subramaniam](#); [Barbara Glenn/DC/USEPA/US@EPA](#); [Bob Sonawane](#)
Cc: [Charles Ris](#); [Gina Perovich](#)
Subject: ACC mtg w Olden. Mtg notes.
Date: 10/25/2012 08:34 AM
Attachments: [ACC Formaldehyde notes.docx](#)

Here are my notes typed up and expanded some based on memory and my handwritten notes.



They are not verbatim, and thus might sometimes not be totally accurate in details. I will also share my handwritten notes and a copy of their handout.

Please keep a copy in our project files of this, and any other meetings with outside groups.

(For example, let's keep in our files copies of the slides from the technical meeting with Tom Starr later that day.)

From: [Ravi Subramaniam](#)
To: [Maria Spassova](#); [Weihsueh Chiu](#); [Catherine Gibbons](#); [Jamie Strong](#); [Ted Berner](#); [Vincent Cogliano](#); [David Bussard](#); [Bob Sonawane](#)
Subject: charge questions and docs for CAST review of evaluation of bottom up approach in formaldehyde doc
Date: 02/13/2013 03:47 PM
Importance: High
Attachments: [CH2Odoc.Adduct_section for CAST.docx](#)
[CAST_questions.docx](#)
[APPENDIX.Adduct.CLEAN.docx](#)
[Swenberg_2011.pdf](#)
[Lu.Swenberg.CRT Mol.Dosimetry.Hcho.2011.pdf](#)
[Moeller.Swenberg_CRT Primate HCOH 2011.pdf](#)
[Lu-Methanol-Toxicol. Sci.-2012.28-38.pdf](#)

I am attaching the section and Appendix pertaining to our evaluation of the "bottom up" approach based on DNA adducts for bounding unit risks for formaldehyde for your review. I am also attaching a set of "charge questions". Although we would appreciate any comment you may have, we are particularly requesting your feedback on a few issues. Thank you for your effort. We look forward to meeting with you all on Feb 26. Note that we meet with Drs. Swenberg and Starr on Feb 27 to discuss specific questions we have on their work.

I am also attaching the relevant papers.

Lynn: Since you sent out the invite could you update the invitation with these also.

EPA Document:



Questions:



Main papers:



Ancillary paper



Ravi.

NCEA-Washington, ORD, EPA
(703) 347-8606, (301) 515-2701 (alternate office)

From: [John Whalan](#)
To: [Thomas Bateson/DC/USEPA/US@EPA](#)
Subject: FA table 4-4
Date: 05/24/2010 11:46 AM
Attachments: [Table 4-4.doc](#)

Here is a revised table 4-4 from the contractor. Hope this works for you.
John

----- Forwarded by John Whalan/DC/USEPA/US on 05/24/2010 11:45 AM -----

From: Terri Konoza/DC/USEPA/US
To: John Whalan/DC/USEPA/US@EPA
Date: 05/24/2010 11:43 AM
Subject: Fw: formaldehyde table done

Hi John,

This came in Friday after I left. Just logging in to make sure that you get it.

If additional changes are needed, contact Cheryl Itkin.

Terri

----- Forwarded by Terri Konoza/DC/USEPA/US on 05/24/2010 11:40 AM -----

From: Lana Wood/CI/USEPA/US
To: Terri Konoza/DC/USEPA/US@EPA
Cc: CI NCEA TSS
Date: 05/21/2010 03:41 PM
Subject: Re: formaldehyde table done

Terri,

Attached is the table with the columns from Beane Freeman copied into the Hauptmann et al. and Wang et al. rows. When you have multiple rows and columns, it is best to copy the entire section, replacing the information in the first 3 columns that were merged.

In case you need to make further changes to the inserted rows, the left 3 columns have been split so you can paginate and merge them later.

Just to let you know, we noticed the repeat header borders were not copying to the repeat row correct (showing up as single line even though set as double line on the first page). This was due to the rows being set height. The entire table was set for standard margins (0.04 which is best for later conversion to 508 pdf) and the set height removed. This fixed the repeating border error.

Please let us know if you need additional help.

Send any further correspondence on this request to CI NCEA TSS group.

Lana-TSS



Table 4-4.doc

▼ Terri Konoza---05/21/2010 02:12:17 PM---We need a table revised for the formaldehyde document. Information from one entry needs to be copi

From: Terri Konoza/DC/USEPA/US
To: Bette Zwayer/CI/USEPA/US@EPA
Cc: CI NCEA TSS
Date: 05/21/2010 02:12 PM
Subject: formaldehyde table

We need a table revised for the formaldehyde document. Information from one entry needs to be copied to two other entries.

The last four columns (Results, statistical significance) for the Beane Freeman et al. (2009) reference need to be copied to the Hauptmann et al. (2009) and Wang et al. (2009) refs. I tired copying as nested, but that didn't work. Thanks.

Have a nice weekend.

Terri

[attachment "Table 4-4.doc" deleted by Lana Wood/CI/USEPA/US]

John

From: [John Whalan](#)
To: [John Schaum](#); [Sury Vulimiri](#); [Chad Thompson](#)
Subject: Fw: Articles, Project 03-18, Fa articles
Date: 02/26/2009 02:30 PM
Attachments: [franklin 2000 FA1391.pdf](#)
[Cap ea 2008 Rapid Commun Mass Spectrom 22--2844-2050.pdf](#)
[Turner ea 2008 Rapid Commun Mass Spectrom 22--526-532.pdf](#)

-----Original Message-----

From: Whalan.John@epamail.epa.gov [mailto:Whalan.John@epamail.epa.gov]
Sent: Thursday, February 26, 2009 1:18 PM
To: Nourse, Bobette
Cc: Washington.Brenda@epamail.epa.gov
Subject: Articles

Could you please provide me with the following papers?

Cap P, Dryáhina K, Pehal F, Spanel P. Selected ion flow tube mass spectrometry of exhaled breath condensate headspace. Rapid Commun Mass Spectrom. 2008 Sep; 22(18):2844-50

Franklin P, Dingle P, Stick s. Raised exhaled nitric oxide in healthy children is associated with domestic formaldehyde levels. Am J Respir Crit Care Med. 2000 May; 161(5):1757-9

Turner C, Parekh B, Walton C, Spanel P, Smith D, Evans M. An exploratory comparative study of volatile compounds in exhaled breath and emitted by skin using selected ion flow tube mass spectrometry. Rapid Commun Mass Spectrom. 2008;22(4):526-32.

John E. Whalan
Toxicologist, ORD - NCEA - IRIS
Phone: 703-347-8639 FAX: 703-347-8689

US EPA, Mailcode 8601D
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Physical location & FedEx:
Two Potomac Yard, Suite N-7211
2733 S. Crystal Drive, Arlington, VA 22202



franklin 2000 FA1391.pdf



Cap ea 2008 Rapid Commun Mass Spectrom 22--2844-2050.pdf
Turner ea 2008 Rapid Commun Mass Spectrom 22--526-532.pdf

From: [Sury Vulimiri](#)
To: [Thomas Bateson](#)
Subject: Hauptmann 2009 reviewed
Date: 04/15/2010 01:12 PM
Attachments: [Hauptmann 2009_SV.doc](#)

Tom,

Here are my edits and comments. I am wondering it has almost 5 pages of text for one study. Is that much required?

Sury



Hauptmann 2009_SV.doc

From: [Sury Vulimiri](#)
To: [Thomas Bateson](#)
Cc: [Danielle DeVoney](#)
Subject: Hauptmann et al 2009 edits
Date: 04/14/2010 04:26 PM
Attachments: [Hauptmann 2009_SV.doc](#)

Tom,

I started to review or edit this. Then I realized that part of it was probably cut and paste from another document. I just stopped at that point. I am not sure whether you wanted me to review this or not.

Sury



Hauptmann 2009_SV.doc

From: [Andrew Kraft](#)
To: [Ryan Jones](#)
Cc: [Barbara Glenn](#); kraft.andrew@epa.gov
Subject: HERO formaldehyde reference
Date: 02/16/2012 04:53 PM
Signed by: CN=Andrew Kraft/OU=DC/O=USEPA/C=US
Attachments: [Songur 2003 FA hippocampal pathology.pdf](#)

Hello Ryan,

I am on the formaldehyde team and would like to add the attached reference to the HERO database for formaldehyde. It will be referenced in the tox review as Songur et al., 2003. Can you please help with this?

Thank you,

Andrew Kraft
EPA-ORD-NCEA-W



From: [Jennifer Jinot](#)
To: [John Whalan](#); [Danielle DeVoney](#)
Cc: [Thomas Bateson](#)
Subject: not using NCI emblamers study for QRA
Date: 04/29/2010 05:13 PM
Attachments: [embalmersQRA-NOT-28apr2010.doc](#)

hi. i just added text to section 5.2.1 in volume III on the L: drive explaining why we did not use the Hauptmann et al. (2009) study for quantitative estimates. the text reflects review comments i received from Tom. so i consider that task completed. if anyone wants to see the reasons without wading through volume III, here they are:



embalmersQRA-NOT-28apr2010.doc

From: [Ravi Subramaniam](#)
To: [Barbara Glenn](#); [Jennifer Jinot](#)
Cc: [Bob Sonawane](#)
Subject: points for discussion during Starr meeting
Date: 10/16/2012 05:06 PM
Attachments: [for mtg w Starr.docx](#)

For bbdr and dna adduct. Please provide feedback before sending to David.



Ravi.

Ravi Subramaniam
Environmental Health Scientist
NCEA-Washington, ORD, EPA
N-7922, Two Potomac Yard, Crystal City
(703) 347-8606, (301) 515-2701 (alternate office)

From: [Rebecca Edelstein](#)
To: [David Bottimore](#)
Cc: [Betzy Colon](#); [Charles Griffiths](#); [Thomas Bateson](#)
Subject: RE: C_EPC07025_0129_0_RCI (Distribution)
Date: 06/06/2011 04:00 PM
Attachments: [Formaldehyde noncancer assessment - Economic section References.docx](#)

From: [Susan Makris](#)
To: [Sury Vulimiri](#)
Cc: [Barbara Glenn](#); [Andrew Kraft](#); [Danielle DeVoney](#); [David Bayliss](#); [Glinda Cooper](#); [Jennifer Jinot](#); [John Whalan](#); [Ravi Subramaniam](#); [Susan Euling](#); [Thomas Bateson](#)
Subject: Re: Estimated Time Line for Completing Formaldehyde Assessment
Date: 08/22/2011 08:12 PM
Attachments: [Zhou et al 2011.pdf](#)

Hi Sury, Thanks. We've already got the Zhou et al. (see attached). I'm not sure about the Zararsiz et al. Sue



Zhou et al 2011.pdf
Susan Makris
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1200 Pennsylvania Ave., NW
Washington, DC 20460
makris.susan@epa.gov
Office: 703-347-8522
Fax: 703-347-8692

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2733 S. Crystal Dr. (Rm N-7712)
Arlington, VA 22202

▼ [Sury Vulimiri---08/22/2011 05:55:31 PM---New Literature on FA Toxicol Ind Health. 2011 Aug;27\(7\):591-8. Epub 2011 Feb 28.](#)

From: Sury Vulimiri/DC/USEPA/US
To: Barbara Glenn/DC/USEPA/US@EPA
Cc: Andrew Kraft/DC/USEPA/US@EPA, Danielle DeVoney/DC/USEPA/US@EPA, David Bayliss/DC/USEPA/US@EPA, Glinda Cooper/DC/USEPA/US@EPA, Jennifer Jinot/DC/USEPA/US@EPA, John Whalan/DC/USEPA/US@EPA, Ravi Subramaniam/DC/USEPA/US@EPA, Susan Euling/DC/USEPA/US@EPA, Susan Makris/DC/USEPA/US@EPA, Thomas Bateson/DC/USEPA/US@EPA
Date: 08/22/2011 05:55 PM
Subject: Re: Estimated Time Line for Completing Formaldehyde Assessment

New Literature on FA

qf9YABkACAAAAAEwAAABMAAEAAAAAAAAAAAAAAAAAAAAAAQwAiAAAAACgBodHRwOi8vd3d3Lm5j
YmkubmxtLm5paC5nb3YvcHVibWVhbnRw50cmV6Rm9ybQ==
Zv8gAAAAAAQAAQADgAAAAAAAAAAAAAAAAAAAAAA=
Zf8gAGb/DgAgTgAAAAAAAAAAcmV0dXJuIGZhbHNlOwA= hf8IAAEAAAO= qgI=

[Toxicol Ind Health. 2011 Aug;27\(7\):591-8. Epub 2011 Feb 28.](#)

**Assessment of the potential reproductive toxicity
of long-term exposure of adult male rats to low-
dose formaldehyde.**

[Dangxia Zhou, Jing Zhang, Haixu Wang.](#)

Source

Pathology Department, Medical School, Xi'an Jiaotong University, Xi'an, China. dangxia75@163.com.

Abstract

Formaldehyde (FA), a ubiquitous environmental pollutant, is extensively used in hospitals, laboratories and many industrial settings. Previous studies have showed that short-term, high-dose FA exposure is toxic to male reproduction of mammals. In this paper, we evaluated the male reproductive toxicity of long-term, low-dose formaldehyde exposure in rats, and explored the potential mechanisms. A total of 30 Sprague-Dawley male rats were randomly allotted to three groups, rats were exposed to FA at a dose of 0 (control), 0.5, 2.46 mg/m(3) respectively by inhalation for consecutive 60 days. The results indicated that the reproductive toxicity of FA is dose-dependent. Testicular, epididymal structure and function in rats of 0.5 mg/m(3) FA exposure group showed no obvious difference compared with those in control group. However, sperm quantity and quality, testicular seminiferous tubular diameter, the activities of superoxide dismutase and glutathione peroxidase was significantly decreased whereas the level of malondialdehyde was significantly increased in rats of 2.46 mg/m(3) FA exposure group compared with those in control group. Moreover, histopathological results showed atrophy of seminiferous tubules, decreases of spermatogenic cells and the lumina were oligozoospermic in testes of 2.46 mg/m(3) FA exposure rats. In conclusion, the level of 0.5 mg/m(3) can be considered as a safe level for FA exposure, but long-term FA exposure at a dose of 2.46 mg/m(3) has a harmful effect on male reproduction by inducing oxidative stress in male rats.

PMID:

21357637

[PubMed - in process]

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qf9YABkACAAAAEwAAABMAAEAAAAAAAAAAAAAAAAAAAAAAqwaIAAAACgBodHRwOi8vd3d3Lm5j
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ev9uAAAAAAAAAAAAABTAAAAAAAAAAAAABFbnRyZXpTeXN0ZW0yLIBFbnRyZXouUHVibWVkbW51
Ym1lZF9SZXN1bHRzUGFuZWwUHVibWVkbW50cmV6Rm9ybQ== qqI=

omega-3 fatty acids daily while exposed to formaldehyde. At the end of the 14-day experimental period, all rats were killed by decapitation and the cerebellum removed. The activities of catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), xanthine oxidase (XO), and malondialdehyde (MDA) levels were determined in cerebellum specimens by using spectrophotometric methods. In our study, levels of SOD and CAT were significantly decreased, and GSH-Px, XO, MDA levels were significantly increased in rats treated with formaldehyde compared with those of the controls. Whereas, it was seen that there was an increase in SOD and CAT enzyme activities and decrease in MDA, XO, and GSH-Px levels in rats administered to omega-3 fatty acids with exposure of formaldehyde. It was determined that exposure of formaldehyde increased free radicals in cerebellum of rats and this increase was prevented by administration of omega-3 fatty acids.

PMID:

21444354

[PubMed - in process]

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Sury

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From: [Jennifer Jinot](#)
To: [Thomas Bateson](#)
Cc: [Barbara Glenn](#); [Danielle DeVoney](#); [John Whalan](#)
Subject: Re: Revised text for Chapter 4
Date: 04/14/2010 03:26 PM
Attachments: [Hauptmann 2009-ijcom.doc](#)

hi, Tom. i reviewed the Hauptmann et al. (2009) text and have a few editorial suggestions. i'll review the Beane Freeman text next. then i'll look at the meta-analyses text if i have time. i don't anticipate reviewing any other sections. jj



Hauptmann 2009-ijcom.doc

▼ Thomas Bateson---04/13/2010 10:31:48 AM---Last week I sent out three emails containing new text for Chapter 4. If you will be providing me wi

From: Thomas Bateson/DC/USEPA/US
To: Danielle DeVoney/DC/USEPA/US@EPA, John Whalan/DC/USEPA/US@EPA, Jennifer Jinot/DC/USEPA/US@EPA, Karen Hogan/DC/USEPA/US@EPA, Kathleen Raffaele/DC/USEPA/US@EPA, Ravi Subramaniam/DC/USEPA/US@EPA, Stan Barone/DC/USEPA/US@EPA, Sury Vulimiri/DC/USEPA/US@EPA, Susan Euling/DC/USEPA/US@EPA, Susan Makris/DC/USEPA/US@EPA, Barbara Glenn/DC/USEPA/US@EPA, Bob Sonawane/DC/USEPA/US@EPA
Date: 04/13/2010 10:31 AM
Subject: Re: Revised text for Chapter 4

Last week I sent out three emails containing new text for Chapter 4. If you will be providing me with major comments, then please due so by 5:00 PM on Wednesday (4/14) so that I can incorporate the edited material into a new version of Chapter 4.

Thanks,
Tom

Thomas F. Bateson, ScD MPH
Epidemiologist
Effects Identification & Characterization Group
EPA/ORD/NCEA
1200 Pennsylvania Ave. NW (Mail Code 8623P)
Washington, DC 20460

From: [Ravi Subramaniam](#)
To: [Weihsueh Chiu](#); [Vincent Cogliano](#); [Maria Spassova](#)
Cc: [Barbara Glenn](#)
Subject: request for CAST review of "bottom up" approach in CH2O assessment
Date: 02/11/2013 10:36 AM
Attachments: [APPENDIX>Adduct.CLEAN.docx](#)
[hcho.Adduct_section for CAST.docx](#)

The formaldehyde team has decided to initiate a CAST review of the revised document's handling of the adduct-based unit risk developed by Swenberg and others. This is the bottom-up approach as they call it and is being pushed as a viable method for many chemicals that are endogenously present. I am writing to ask if you would have the time to review and attend the CAST meeting. It is tentatively scheduled for August 26th. Also, Swenberg and Starr (via the ACC) is meeting with us on August 27 afternoon (exact time not decided on yet) to discuss various questions we had. If you have the time, I would appreciate your attending that also.

I am attaching our write up and will follow up with the relevant papers and questions for the review after hearing from you. Thanks.

Ravi.

Ravi Subramaniam
IRIS, ORD-EPA.
(703) 347-8606, (301) 515-2701 (Mon, Fri).

Meeting Change:

Calendar Entry

Subject: Formaldehyde: Discussion of Hauptmann article for myeloid leukemia
When
Date: Thursday 04/08/2010
Time: 02:00 PM - 03:00 PM (1 hour)
Chair: [Danielle DeVoney](#)
Invitees
Required (to): [Bob Sonawane](#); [Jennifer Jinot](#); [John Whalan](#); [Paul White](#); [Thomas Bateson](#)
Optional (cc):
Where
Location: CN=NCEA PY - 7th Flr Conf Rm N-7771/O=ORD-NCEA-DC@EPA
Attachments: [Hauptmann ea 2009 J Natl Cancer Inst 101\(24\)1696-1708.pdf](#)

Hi -

There seem to be a range of views as to the utility of the recent NCI update of myeloid leukemia in embalmers and funeral directors for supporting the quantitative risk assessment.

I believe it is important to reach consensus on this issue as much as possible - and determine what if any follow-up actions are needed.

Given the time frames involved - I think it would be helpful to reach this consensus as soon as possible.

Paul - please let me know if there are others you would like to involve in the discussion,

Thanks,
Danielle



Hauptmann ea 2009 J Natl Cancer Inst 101(24)1696-1708.pdf

Hi -

It seems like it might be more efficient to discuss the Hauptmann 2009 paper next week. { I understand folks are focusing on other parts of the document this week.

My apologies if I misunderstood the degree to which there were a range of opinions on the utility of this article for the quantitative assessment.

I am looking towards what elements need to go into the NAS draft - in the past we have had a few changes in direction - and I am just trying to bring closure regarding this question and document the decision.

It looks like people are free next Thursday afternoon - Tom feel free to invite Glinda to the discussion if you like.

dd